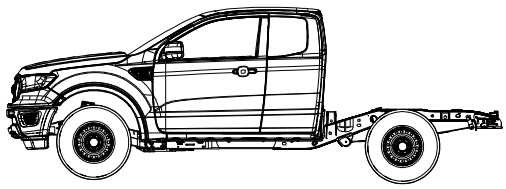
DO NOT DESTROY: THIS MANUAL IS REQUIRED BY LAW. KEEP UNTIL THE VEHICLE IS COMPLETED BY THE FINAL STAGE MANUFACTURER.

2020
RANGER
INCOMPLETE VEHICLE MANUAL

Incomplete Vehicle Types For This Manual



Ranger
Chassis Cab

May, 2020
▽ LB3B-19A268-AB

U.S. & CANADIAN MOTOR VEHICLE SAFETY STANDARDS

(Application By Vehicle Type - For Reference)

Standard Number	Title of Standard	Vehicle Type		Equipment (1)
		Truck	MPV	
101	Controls and Displays	X	X	
102	Transmission Shift Lever Sequence, Starter Interlock and Transmission Braking Effect	X	X	
103	Windshield Defrosting and Defogging Systems	X	X	
104	Windshield Wiping and Washing Systems	X	X	
106	Brake Hoses	X	X	X
108	Lamps, Reflective Devices and Associated Equipment	X	X	X
110	Tire Selection and Rims and Motor Home / Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of 4,536 Kilograms (10,000 Pounds) or Less	X	X	X
111	Rear Visibility	X	X	
113	Hood Latch System	X	X	
114	Theft Protection and Rollaway Prevention	X	X	
115	Vehicle Identification Number (Canada only)	X	X	
116	Motor Vehicle Brake Fluids	X	X	X
118	Power-Operated Window, Partition, and Roof Panel Systems	X	X	
124	Accelerator Control Systems	X	X	
126	Electronic Stability Control Systems for Light Vehicles	X	X	X
135	Light Vehicle Brake Systems	X	X	
138	Tire Pressure Monitoring Systems	X	X	X
139 (2)	New Pneumatic Radial Tires for Light Vehicles			X
201	Occupant Protection in Interior Impact	X	X	
202a	Head Restraints	X	X	
203	Impact Protection for the Driver from the Steering Control System	X	X	
204	Steering Control Rearward Displacement	X	X	
205	Glazing Materials	X	X	X
206	Door Locks and Door Retention Components	X	X	X
207	Seating Systems	X	X	
208	Occupant Crash Protection	X	X	X
209	Seat Belt Assemblies	X	X	X
210	Seat Belt Assembly Anchorages	X	X	X
212	Windshield Mounting	X	X	
213	Child Restraint Systems (U.S. only)	X	X	X
213.4	Built-In Restraint Systems and Built-In Booster Seats (Canada only)	X	X	
214	Side Impact Protection	X	X	
216a	Roof Crush Resistance	X	X	
219	Windshield Zone Intrusion	X	X	
225	Child Restraint Anchorage Systems	X	X	
226	Ejection Mitigation	X	X	X
301	Fuel System Integrity	X	X	
301.1	LPG Fuel System Integrity (Canada only)	X	X	
301.2	CNG Fuel System Integrity (Canada only)	X	X	
302	Flammability of Interior Materials	X	X	
303	Fuel System Integrity of Compressed Natural Gas Vehicles (U.S. only)	X	X	
304	Compressed Natural Gas Fuel Container Integrity (U.S. only)	X	X	
305	Electric-Powered Vehicles: Electrolyte Spillage and Electrical Shock Protection	X	X	X
403	Platform Lift Systems for Motor Vehicles			X
404	Platform Lift Installations in Motor Vehicles	X	X	
PART 565 / 565.13	Vehicle Identification Number (VIN) Requirements (U.S. only)	X	X	
PART 567	Certification (Label Content & Location)	X	X	
1106	Noise Emissions (Canada only)	X	X	

(1) This column identifies Standards that have equipment/component requirements.

(2) Canadian 139 requirements are found in the Motor Vehicle Tire Safety Standards.

INTRODUCTION

Information in this manual is furnished pursuant to United States and Canadian safety regulations or, in some cases where the information is not required by regulation, is furnished for the convenience of intermediate or final stage vehicle manufacturers. Incomplete vehicles manufactured for sale or importation into the U.S., are specially equipped for the United States. The descriptions and statements contained in the manual relate only to motor vehicle safety standards issued under the National Traffic and Motor Vehicle Safety Act of 1966 as amended.

An incomplete vehicle manufactured for sale or importation into Canada is specially equipped for Canada. This vehicle conforms to the applicable Canadian Motor Vehicle Safety Standards (CMVSS) on the date of manufacture printed on the cover of this manual. Requirements unique to vehicles for use in Canada are identified in the “Statements of Conformity” and the “Canadian Vehicles” sections of this manual.

The “Emission Certification Information” section of this manual contains information regarding conformity to exhaust emission regulations of the United States, Canada, and the State of California and fuel economy regulations of the United States.

This manual should not be relied upon with respect to compliance with any regulation of the Federal Highway Administration or regulations issued pursuant to the Occupational Safety and Health Act (OSHA) or any other Federal, state, provincial, or local regulations governing the performance or construction of motor vehicles (except for those requirements shown in the “Emissions Certification Information” section of this manual under the headings “Unleaded Gasoline Label,” “Warranty and Maintenance,” and “Emission Control Information Label”). It is the responsibility of the final stage manufacturer to determine applicability and comply with any Federal, state, or local requirements not detailed in this manual.

IMPORTANT:

UNITED STATES VEHICLES

Ford Motor Company has endeavored, whenever possible, to state the specific conditions under which an incomplete vehicle may be completed to conform to each applicable Federal Motor Vehicle Safety Standard. These specific statements are intended to aid subsequent stage manufacturers in avoiding instances of inadvertent noncompliance to particular standards.

Note that the final responsibility for the compliance of the completed vehicle rests with the final stage manufacturer who is required by law to certify, as prescribed by Title 49, Code of Federal Regulations, Part 567.5, that the completed vehicle conforms to all applicable Federal Motor Vehicle Safety Standards and all applicable federal, state and California emission/noise standards.

Ford Motor Company does not make any representation as to the appropriateness of modifications for any particular application other than expressly stated herein. Intermediate and final stage manufacturers must exercise proper engineering judgment to determine if a modification is appropriate for their specific application.

IMPORTANT:

UNITED STATES AND CANADIAN VEHICLES

Alterations to an incomplete vehicle by someone other than Ford Motor Company, or damage in transit, may affect compliance statements that are furnished in this manual, or representations that are printed on the label that may be affixed to a vehicle.

TABLE OF CONTENTS

U.S. & CANADIAN MOTOR VEHICLE SAFETY STANDARDS 2

INTRODUCTION 3

DEFINITIONS 5-6

GENERAL INFORMATION 7
- Directions 7

VEHICLE DESCRIPTION 8

COMPLETED VEHICLE TYPES 9

STATEMENTS OF CONFORMITY 10-22

CANADIAN VEHICLES
- Vehicle Identification 23
- Daytime Running Lamp (DRL) 23
- Canadian Radio Frequency Interference (RFI) 23

EMISSION CERTIFICATION INFORMATION
- Vehicle Emission Control Information (VECI) Label 24
- Frontal Area and Weight Restrictions 24
- EPA Special Emergency Vehicle Emissions 24
- Emission Control Hardware 25
- High Altitude Requirements 25
- Unleaded Gasoline Label 25
- Tampering with Noise Controls 25
- Warranty and Maintenance 25
- Evaporative Emissions 25
- Malfunction Indicator Light (MIL) 25
- Ozone Depleting Substance (ODS) 25
- California Fuel Vapor Recovery 26
- California Motor Vehicle Emission Control Label 26
- Radio Frequency Interference (RFI) 26

REFERENCE INFORMATION 27

DEFINITIONS

The following definitions are from Title 49, Code of Federal Regulations (49CFR), Parts 567.3, 568.3 and 571.3 where noted. Canadian definitions are from Canadian Motor Vehicle Safety Regulations (CMVSR), Section 2(1), and are in italics. Ford Motor Company definitions are for the purpose of this manual only. Some terms are followed by an abbreviation that is used throughout this manual.

Ambulance – is a vehicle for emergency medical care which provides: a driver's compartment; a patient compartment to accommodate an Emergency Medical Technician (EMT), Paramedic, and two litter patients (one patient on the primary cot and a secondary patient on folding litter located on the squad bench) so positioned that the primary patient can be given intensive life-support during transit; equipment and supplies for emergency care at the scene as well as during transport; two-way radio communication; and, when necessary, equipment for light rescue/extrication procedures. The Ambulance shall be designed and constructed to afford safety, comfort, and avoid aggravation of the patient's injury or illness (from Federal Specification KKK-A-1822-F). Ford Motor Company also includes within its definition of ambulance any vehicle that is used for transporting life-support equipment, for rescue operations, or for non-emergency patient transfer if the engine of the vehicle is equipped with a "throttle kicker" device which enables an operator to increase engine speed over normal idle speed when the vehicle is not moving. (Ford Motor Company)

B-Pillar – is the vehicle body structure located directly rearward of each front door. This structure will include the outer panel, all inner panels or reinforcements which support the door opening, the door latching system, and/or the roof structure. (Ford Motor Company)

Basic (Stripped) Chassis – an incomplete vehicle, without occupant compartment, that requires the addition of an occupant compartment and cargo-carrying, work performing, or load-bearing components to perform its intended function. (Ford Motor Company)

Bus – a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons. (49CFR571.3)

Bus *(Canada) – a vehicle having a designated seating capacity of more than 10, but does not include a trailer or a vehicle imported temporarily for special purposes. (autobus)*

Chassis Cab – an incomplete vehicle, with completed occupant compartment, that requires only the addition of cargo-carrying, work performing, or load-bearing components to perform its intended functions. (49CFR567.3)

Completed Vehicle – a vehicle that requires no further manufacturing operations to perform its intended function. (49CFR567.3)

Critical Control Item – is a component or procedure which may affect compliance with a Federal regulation or, which could directly affect the safe operation of the vehicle. The identifying symbol is an inverted delta (▽). (Ford Motor Company)

Cutaway Chassis – an incomplete vehicle that has the back of the cab cut out for the intended installation of a structure that permits access from the driver's area to the back of the completed vehicle. (Ford Motor Company)

Cutaway Chassis *(Canada) – an incomplete vehicle that has the back of the cab cut out for the intended installation of a structure that permits access from the driver's area to the back of the vehicle. (châssis tronqué)*

Designated Seating Position **–** means a seat location that has a seating surface width, as described in §571.10(c) of this part, of at least 330 mm (13 inches). The number of designated seating positions at a seat location is determined according to the procedure set forth in §571.10(b) of this part. However, for trucks and multipurpose passenger vehicles with a gross vehicle weight rating greater than 10,000 lbs, police vehicles as defined in S7 of FMVSS 208, firefighting vehicles, ambulances, and motor homes, a seating location that is labeled in accordance with S4.4 of FMVSS 207 will not be considered a designated seating position. For the sole purpose of determining the classification of any vehicle sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events, any location in such a vehicle intended for securement of an occupied wheelchair during vehicle operation is regarded as four designated seating positions. (49CFR571.3)

Designated Seating Position *(Canada) – means a location in a vehicle that is likely to be used as a seating position and that has a seating surface width of at least 330 mm; (place assise désignée)*

Final-Stage Manufacturer – a person who [company that (CMVSR)] performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle. (49CFR567.3)

Gross Axle Weight Rating (GAWR) – the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces. (49CFR571.3)

Gross Combination Weight Rating (GCWR) – the value specified by the manufacturer as the loaded weight of a combination vehicle. (49CFR571.3)

Gross Vehicle Weight Rating (GVWR) – the value specified by the manufacturer as the loaded weight of a single vehicle. (49CFR571.3)

H-Point – the mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins For Use in Defining Vehicle Seating Accommodations," November 1962. (49CFR571.3)

H-point *(Canada) – the mechanically hinged hip point of a manikin that simulates the actual pivot centre of the human torso and thigh, described in SAE Standard J826 APR80, Devices for Use in Defining and Measuring Vehicle Seating Accommodation. (point H)*

Incomplete Vehicle – an assemblage consisting, at a minimum, of chassis (including the frame) structure, power train, steering system, suspension system, and braking system, in the state that those systems are to be part of the completed vehicle, but requires further manufacturing operations to become a completed vehicle. (49CFR567.3)

Incomplete Vehicle *(Canada) – a vehicle (a) other than a vehicle imported temporarily for special purposes, that is capable of being driven and that consists, at a minimum, of a chassis structure, power train, steering system, suspension system and braking system in the state in which those systems are to be part of the completed vehicle, butrequires further manufacturing operations to become a completed vehicle or (b) that is an incomplete trailer. (véhicule incomplet)*

(Continued next page)

(Continued)

Incomplete Vehicle Manufacturer – a person [company that (CMVSR)] who manufactures an incomplete vehicle by assembling components none of which, taken separately, constitute an incomplete vehicle. (49CFR567.3)

Intermediate Manufacturer – a person [company (CMVSR)], other than the incomplete vehicle manufacturer or the final stage manufacturer, who [that (CMVSR)] performs manufacturing operations on a vehicle manufactured in two or more stages. (49CFR567.3)

Motor Home – a multi-purpose vehicle with motive power that is designed to provide temporary residential accommodations, as evidenced by the presence of at least four of the following facilities: cooking; refrigeration or ice box; self-contained toilet; heating and/or air conditioning [system that can function independently of the vehicle engine (CMVSR)]; a potable water supply system including a faucet and a sink; and a separate 110-125 volt electrical power supply and/or an LP gas supply. (49CFR571.3)

Multifunction School Activity Bus (MFSAB) – a school bus whose purposes do not include transporting students to and from home or school bus stops. (49CFR571.3)

Multipurpose Passenger Vehicle (MPV) – a motor vehicle with motive power, except a low-speed vehicle or trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation. (49CFR571.3)

Multipurpose Passenger Vehicle (MPV) *(Canada) – a vehicle having a designated seating capacity of 10 or less that is constructed either on a truck-chassis or with special features for occasional off-road operation, but does not include an air cushion vehicle, an all-terrain vehicle, a golf cart, a low-speed vehicle, a passenger car, a three-wheeled vehicle, a truck or a vehicle imported temporarily for special purposes. (véhicule de tourisme à usages multiples)*

Pickup Box Delete – a Chassis Cab incomplete vehicle created by ordering a Pickup Box Delete option on an otherwise completed vehicle (Ford Motor Company)

School Bus – a bus that is sold, or introduced in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include a bus designed and sold for operation as a common carrier in urban transportation. (49CFR571.3)

School Bus *(Canada) – a bus designed or equipped primarily to carry students to and from school. (autobus scolaire)*

Seating Reference Point – the unique design H-point, as defined in SAE J1100 (June 1984), which:

(a) establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle,

(b) has X, Y, and Z coordinates established relative to the designed vehicle structure,

(c) simulates the position of the pivot center of the human torso and thigh, and

(d) is the reference point employed to position the two-dimensional drafting template described in SAE J826 (May 1987).

(abbreviated by Ford Motor Company)

Seating Reference Point *(Canada) – the unique Design H-point, as defined in section 2.2.11.1 of SAE Recommended Practice J1100 (June 1993), that:*

(a) establishes the rearmost normal design driving or riding position of each designated seating position, taking into account all modes of adjustment – horizontal, vertical and tilt – in a vehicle,

(b) has X, Y and Z coordinates, as defined in section 2.2.3 of SAE Recommended Practice J1100 (June 1993), established relative to the designed vehicle structure,

(c) simulates the position of the pivot centre of the human torso and thigh, and

(d) is the reference point employed to position the H-point template with the 95th percentile leg, as described in section 3.1 of SAE Standard J826 (June 1992), or, if that drafting template cannot be positioned, the reference point when the seat is in its rearmost adjustment position. (point de référence de position assise)

Second Unit Body (SUB) – consists of the body structure and/or all the cargo carrying, work performing, and/or load bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle. (Ford Motor Company)

Service Body – a type of Second Unit Body (SUB) that incorporates structural side and rear panels that extend below frame height. (Ford Motor Company)

Subsequent Stage Manufacturer – a term which means either intermediate or final stage manufacturers or both. (Ford Motor Company)

Trimmed Seat – a complete functional seat assembly including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, all attaching hardware, and the final trim material (i.e., cloth, leather, or vinyl). (Ford Motor Company)

Truck – a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment. (49CFR571.3)

Truck *(Canada) – a vehicle designed primarily for the transportation of property or special-purpose equipment but does not include a competition vehicle, a crawler-mounted vehicle, a trailer, a work vehicle, a vehicle imported temporarily for special purposes or a vehicle designed for operation exclusively off-road. (camion)*

Unloaded Vehicle Weight (UVW) – the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when it is not in use. (49CFR571.3)

Unloaded Vehicle Weight *(Canada) – the weight of a vehicle equipped with the containers for the fluids necessary for the operation of the vehicle filled to their maximum capacity, but without cargo or occupants. (poids du véhicule sans charge)*

Untrimmed Seat – the structure including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, and all attaching hardware required for a functional seat assembly without the final trim material (e.g., cloth, leather, or vinyl) and trim material attaching components. (Ford Motor Company)

GENERAL INFORMATION

Information in this section is provided pursuant to Title 49, Code of Federal Regulations, Part 568 – "Vehicles Manufactured in Two or More Stages", and Section 6 of the Canadian Motor Vehicle Safety Regulations (CMVSR) – "Vehicles Manufactured in Stages." Part 568 specifies that final stage manufacturers must complete vehicles in compliance with all applicable Federal Motor Vehicle Safety Standards and affix a label to each incomplete vehicle that is completed in accordance with 49CFR567.5. Section 6.6 of the CMVSR provides labeling requirements for vehicles that are to be sold in Canada.

DIRECTIONS

STATEMENTS OF CONFORMITY

The "Statements of Conformity" section of this manual lists the Federal Motor Vehicle Safety Standards in effect on the date of manufacture of this incomplete vehicle that are applicable to the type(s) of completed vehicles into which this incomplete vehicle may be manufactured. This date is shown on the label affixed to the cover of this manual. These statements, in most cases, apply to specific types of incomplete or completed vehicles and identify GVWR and UVW weight ranges.

The incomplete vehicle type is identified by the 5th, 6th, and 7th digits of the Vehicle Identification Number (VIN). The completed vehicle types to which this incomplete vehicle may appropriately be completed is printed on the label, under the heading "May Be Completed As," that is affixed to the cover of this document. The Completed Vehicle Types chart on a following page identifies how various incomplete vehicles with an optional prep package or trim code may be completed.

Each statement of conformity is identified by a safety standard number located at the left margin. Because there may be multiple statements of conformity for each safety standard, use care to select the appropriate statement. Unique CMVSS requirements will be identified at the conclusion of the representations for a particular safety standard.

Compliance statements provided in this manual are of the three following types (49CFR568.4):

Type I • A statement that the vehicle, when completed, will conform to the standard if no alterations are made in identified components of the incomplete vehicle.

Type II • A statement of specific conditions of final manufacture under which the incomplete vehicle manufacturer specifies that the completed vehicle will conform to the standard.

Type III • A statement that conformity with the standard cannot be determined based upon the components supplied on the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation as to conformity with the standard.

IMPORTANT:

To rely on the compliance representations in this manual, the incomplete vehicles must be completed as one of the completed vehicle types designated on the label affixed to the cover of this manual, and must not exceed the specified GVWR, GAWRs, or the Unloaded Vehicle Weight limits when specified in this manual.

VEHICLE SPECIAL ORDER (VSO) VEHICLES

VSO vehicles can be identified by a number with the letters VSO in the lower right area of the Incomplete Vehicle Information Label which is affixed to the driver-door lock pillar. See the sample labels on the following page.

The Statements of Conformity section of this manual includes compliance representations for certain VSO vehicles – these vehicles are identified in the Completed Vehicle Types chart. Other VSO vehicles may require additional Statements of Conformity, which would be included in a Supplement Section of this manual.

FORD BODY BUILDER ASSISTANCE

Throughout this Incomplete Vehicle Manual you will find reference to information found in the Ford Body Builders Layout Book which contains additional design recommendations and specifications provided to assist subsequent stage manufacturers in completing incomplete vehicles. The Ford Body Builders Layout Book can be accessed via the web at https://fordbbas.com under "Publications".

The Ford Body Builder Advisory Service may be consulted regarding information contained in this manual via the following methods:

- Call (877) 840-4338
- E-mail via the web at https://fordbbas.com under "Contact Us".

INCOMPLETE VEHICLE MANUAL COVER

The cover of this manual depicts the incomplete vehicle configurations for which compliance representations are contained in this manual. Also, a label is affixed to the cover which includes the Vehicle Identification Number (VIN) for the specific vehicle to which this manual belongs. The label identifies the following information which pertains only to the vehicle with the corresponding VIN:

- GVWR
- Front and rear GAWRs
- Tire and wheel size
- Cold tire inflation pressure (kPa/PSI)
- Completed vehicle type(s) into which the incomplete vehicle may be manufactured
- Optional prep package when the vehicle is so equipped

INCOMPLETE VEHICLE INFORMATION LABEL

All Ranger incomplete vehicles manufactured by Ford Motor Company will have an Incomplete Vehicle Information Label affixed to the driver-door pillar. Samples of typical labels are shown below.

The 5th, 6th, and 7th positions of the Vehicle Identification Number (VIN) will identify the incomplete vehicle type. These three positions are used in the Completed Vehicle Types chart.

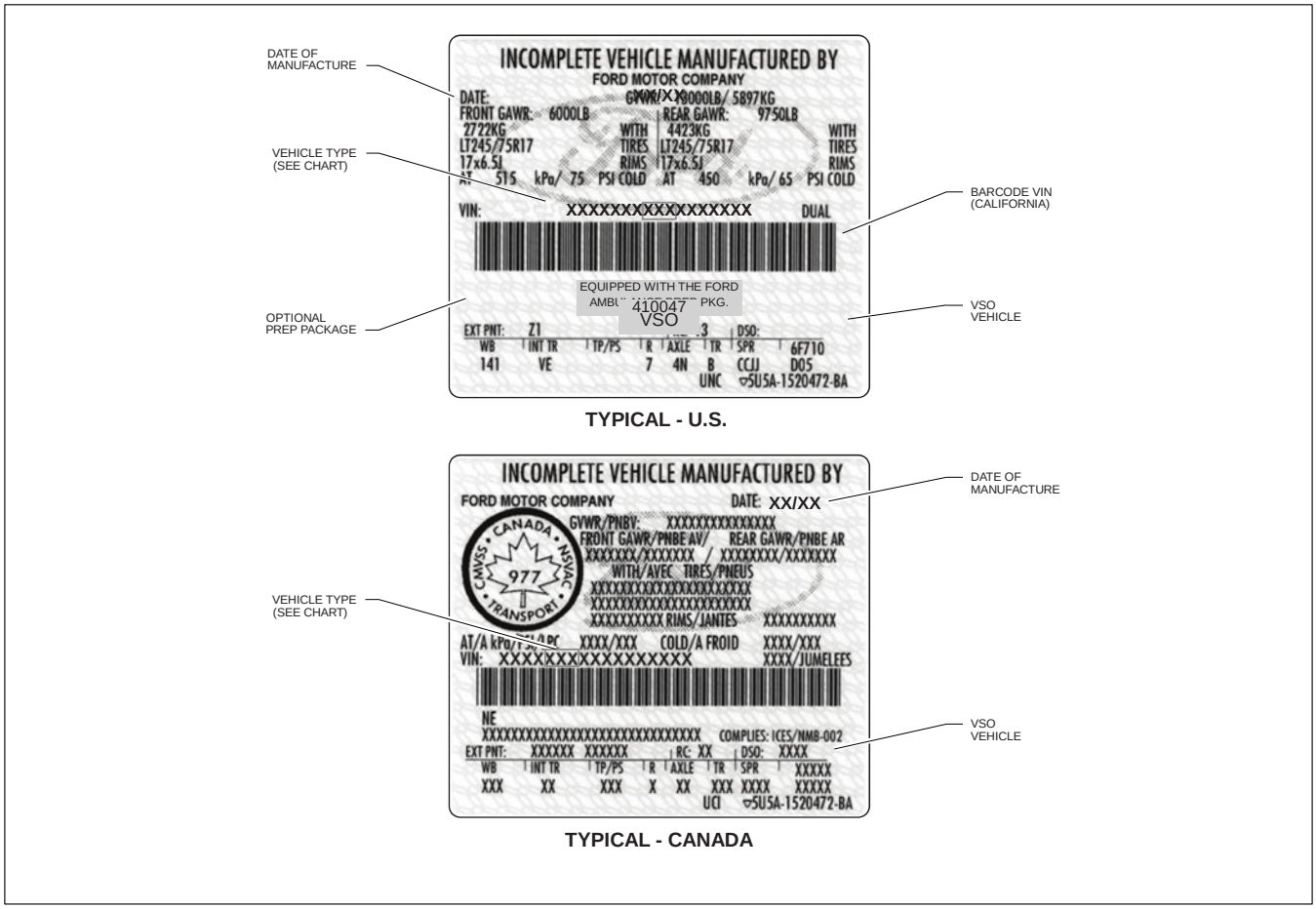
The California Air Resources Board (CARB) requires a Vehicle Identification Number (VIN) Label having a non-contact barcode reading wand capability. The barcode located directly below the VIN on the Incomplete Vehicle Information Label, when provided, will comply with this regulation.

The Canadian Motor Vehicle Safety Act and Regulations require installation of an Incomplete Vehicle Information Label with the National Safety mark on it on vehicles manufactured for sale in Canada. A sample of a typical label is shown below.

OPTIONAL PREP PACKAGES

Incomplete vehicles produced by Ford Motor Company, in some instances, are equipped with an optional prep package. The Ranger does not currently have any prep packages. The Completed Vehicle Types chart on the following page will identify incomplete vehicles and an optional prep package or trim code that may be required by Ford Motor Company if final stage manufacturers wish to rely on the Statements of Conformity or, in some cases, preserve the Ford Motor Company new vehicle warranty.

If an incomplete vehicle is equipped with an optional prep package, both the Incomplete Vehicle Information Label affixed to the vehicle and the label on the front of this manual will identify the prep package.



INCOMPLETE VEHICLE INFORMATION LABELS

COMPLETED VEHICLE TYPES

5TH, 6TH, 7TH VIN DIGIT	INCOMPLETE VEHICLES	COMPLETED VEHICLES	
		TRUCK	MPV
RANGER XL (Fleet only)			
R1A	Ranger SuperCab 4X2	X	X

IMPORTANT:
Ford Motor Company makes no representation that the completed vehicle types listed above are the only vehicle types appropriate for the incomplete vehicles listed. However, if a unit is completed as a vehicle type other than as listed above, the Statements of Conformity may not be applicable.

STATEMENTS OF CONFORMITY

The following Statements of Conformity apply to vehicles that are produced for sale or importation into the United States or Canada. The term “Incomplete Vehicle Types” in these statements refers to the types of the vehicles depicted on this manual’s cover and listed in the chart on the previous page.

The number preceding each Statement of Conformity refers to the number designation for a Part or a Section of Part 571 of the Federal Motor Vehicle Safety Standard.

The statements provided for each safety standard number are appropriate compliance representations for each Canadian safety standard number if this incomplete vehicle, identified by the VIN on the front of the document, was manufactured by Ford Motor Company for sale or use in Canada, except as may be noted at the conclusion of each safety standard number.

101 The statements below are applicable to all incomplete vehicle types:

This vehicle, when completed, will conform to Standard 101, Controls and Displays, if:

- The controls, displays, and their identifications supplied by Ford Motor Company are not removed, relocated, altered, or modified.
- The components, wiring, and power supply installed by Ford Motor Company to illuminate any control, display, or their identification are not removed or altered so as to affect lighting performance.
- Components added to the vehicle do not obstruct the driver’s ability to operate or visually locate the controls, displays, and their identifications.
- The driver-seat is not replaced, relocated, or modified other than for the addition of seat trim.

Any controls, displays, and illumination added to this vehicle must conform to the requirements of this Standard.

102 The statement below is applicable to all incomplete vehicle types:

This vehicle, when completed, will conform to Standard 102, Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect, if no alterations or adjustments are made to the transmission, shift cable, transmission outer shift lever, shift cable bracket, vacuum tubes, vacuum pump system, brake-shift interlock system, starter interlock system, wiring circuit from the interlock switch to the power source, and transmission gear selector indicator (PRNDL).

If an auxiliary transmission is added to this vehicle, it must conform to the requirements of this Standard.

103 The statement below is applicable to all incomplete vehicle types:

This vehicle, when completed, will conform to Standard 103, Windshield Defrosting and Defogging Systems, if no alterations or adjustments are made to heater and blower assemblies, ducting, operating controls, electrical circuit from the blower assembly to the power source, windshield, coolant hoses from the radiator or engine to the heater, and if no obstructions are added that restrict or otherwise redirect the air flow from the defroster outlets to the windshield.

104 The statement below is applicable to all incomplete vehicle types:

This vehicle when completed, will conform to Standard 104, Windshield Wiping and Washing Systems, if no alterations are made to the windshield, the windshield wiping and washing system including the electrical circuit from the windshield wiping and washing motors to the power source, and if no obstructions are added that restrict or otherwise redirect fluid flow from the washer nozzles to the windshield.

106 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 106, Brake Hoses, if the brake hose assemblies supplied by Ford Motor Company are not removed, relocated, altered, or modified and if no brake hose assemblies are added.

108 The statements below, concerning Standard 108 Lamps, Reflective Devices, and Associated Equipment, are applicable to the Chassis Cab:

- No additional components may be added to the vehicle which block access to the headlamp aiming devices, as provided by Ford Motor Company, if removing them requires the use of tools.
- Daytime Running Lamps (DRL’s): Vehicles for sale or use in Canada are equipped with DRL’s that meet CMVSS 108 DRL requirements; DRL's, when provided on an incomplete vehicle, also meet FMVSS 108 specifications.
- Conformity with Standard 108, S12, Headlamp Concealment Devices, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this section of the Standard.

108 The statement below is applicable to the Chassis Cab with a GVWR of 4536 kg [10,000 lb] or less and a vehicle width less than 2032 mm [80 in]:

This vehicle, when completed, will conform to Standard 108, Lamps, Reflective Devices, and Associated Equipment. If the Chassis Cab Center High Mounted Stop Lamp (CHMSL) is obstructed from the rear of the completed vehicle, it must be replaced with a CHMSL that meets all the requirements of this standard.

108 *(Continued next page)*

108 *(Continued)*

108 The statements below are applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 108, Lamps, Reflective Devices, and Associated Equipment, if all the required lighting equipment as indicated in Table A on the next page (identified by the codes R and S) is designed and installed in accordance with the requirements of Standard 108 and the directions contained in this compliance manual. Additionally, if the completed vehicle width is 2032 mm [80 in] or more, and/or the overall length is 9.14 meters [30 feet] or more, front and rear clearance lamps, and front and rear identification lamps, and/or intermediate side marker lamps, and reflex reflectors (not supplied by Ford Motor Company) are also required for compliance with Standard 108.

The items of equipment which are supplied by Ford Motor Company (identified by the code S in Table A) are designed and installed to conform to all the applicable requirements of Standard 108. The completed vehicle, with these components installed, will conform to Standard 108 if the subsequent stage manufacturer does not remove, relocate, replace or modify such equipment or modify the power supply or wiring to such equipment, and does not complete the body in such a configuration as to impair the conformity to the photometric and/or visibility requirements of the installed lamps and reflective devices.

Specific requirements for the fitment of lighting and associated equipment are listed by incomplete vehicle type in Table A.

Lamps, reflective devices, and associated equipment necessary to complete the vehicle from an incomplete vehicle stage must conform to the equipment, location, activation, visibility, photometric and performance requirements of Standard 108 and to the applicable SAE standards or recommended practices referenced or sub-referenced in this Standard.

All electrical equipment added to the vehicle by subsequent stage manufacturers must conform to the wiring practices set forth in the Electrical Wiring Section of the *Ford Truck Body Builders Layout Book*.

108 Canadian Requirements:

The preceding statements for Standard 108 are appropriate compliance representations for CMVSS 108, Lighting System and Retroreflective Devices, if this vehicle is manufactured for sale and use in Canada, provided:

- No component of the supplied Daytime Running Lamp (DRL) system is removed, relocated, or modified.
- The DRL circuits in the Body Control Module or headlamp circuits/ hardware are not altered.
- The Body Control Module is not repositioned.

TABLE A

Standard 108 Lighting Equipment For Ranger Chassis Cab Vehicles

Item		Completed as Truck or MPV: Width less than 2032 mm [80 in]	Completed as Truck or MPV: Width 2032 mm [80 in] or more
Headlamps with Hi/Lo beam switching		S (1)	S (1)
Daytime Running Lamps (when provided)		N/S (2)	N/S (2)
Tail Lamps		S	S
Stop Lamps		S	S
Center High Mounted Stop Lamp (CHMSL)		S	N
License Plate Lamps		S	S
Reflex Reflectors	– Side Front	S	S
	– Side Rear	R	R
	– Rear	R	R
Side Marker Lamps	– Front	S	S
	– Rear	R	R
Back-Up Lamps		S	S
Turn Signal Lamps	– Front	S	S
	– Rear	S	S
Turn Signal Operating Unit		S	S
Turn Signal Flasher		S	S
Vehicular Hazard Warning Signal Operating Unit		S	S
Vehicular Hazard Warning Signal Flasher		S	S
Identification Lamps	– Front	N	R
	– Rear	N	R
Clearance Lamps	– Front	N	R
	– Rear	N	R
Parking Lamps		S	N

S Required on completed vehicle and supplied with the incomplete vehicle.

R Required on completed vehicle and <u>not</u> supplied with the incomplete vehicle.

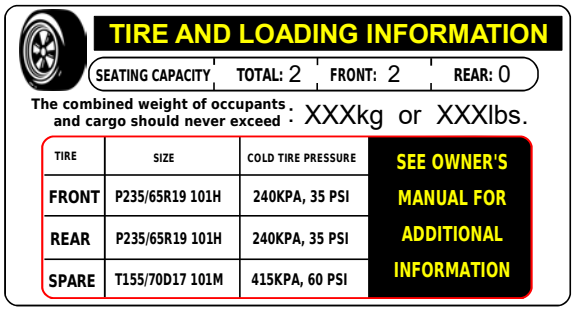
N Not required for completed vehicle.

(1) Due to variations in finished vehicle attitude, headlights should be aimed after all modifications are completed.

(2) Required on Canadian vehicles; optional on U.S. vehicles.

110 The statement below is applicable to all incomplete vehicles with a GVWR of 4536 kg [10,000 lbs] or less:

This incomplete vehicle does not comply to FMVSS 110, Tire Selection and Rims and Motor Home / Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of 4,536 Kilograms (10,000 Pounds) or Less. In order to comply, the final stage manufacturer must permanently affix a tire placard as specified in paragraph S4.3. The placard must be affixed to the B-Pillar. Shown below is a sample U.S. (only) placard; Canadian vehicles require a similar, but bilingual placard.



111 The statement below is applicable to the Chassis Cab when not equipped with outside mirrors:

Conformity with Standard 111, Rear Visibility, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

111 The statements below are applicable to the Chassis Cab when equipped with OEM outside mirrors:

This vehicle, when completed, will conform to Standard 111, Rear Visibility, S6 & S7 as relates to outside mirrors, if:

- The mirrors and their mounts as supplied by Ford Motor Company are not removed, relocated, replaced, nor altered.
- No structural modifications are made to the body which would affect the stability of the mirror mounts.
- Any modifications or additions made to the incomplete vehicle do not adversely affect the driver's view to the rear in the outside mirrors along both sides of the vehicle.

111 The statement below is applicable to the Chassis Cab with a GVWR of 4536 kg [10,000 lb] or less:

Conformity with Standard 111, Rear Visibility, S6.2 Rear visibility, as relates to rearview image devices, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly, Ford Motor Company makes no representation as to conformity with this Standard.

113 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 113, Hood Latch Systems, if the hood latch system as provided by Ford Motor Company is not removed or altered.

114 The statements below are applicable to the Chassis Cab when completed as either a MPV or a Truck with a GVWR of 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 114, Theft Protection and Rollaway Prevention, if the following components, to the extent provided by Ford Motor Company, are not removed, relocated, altered, or modified in any way:

- Steering column locking mechanism system
- Ignition key/transmission shift interlock locking system
- Ignition key-locking system
- Key warning buzzer system

If any of the above components are added to the vehicle they must conform to the requirements of this Standard.

115 Canadian Requirements:

The statements for Part 565.13 are appropriate compliance representations for CMVSS 115, Vehicle Identification Number, if this incomplete vehicle was manufactured for sale or use in Canada.

116 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 116, Motor Vehicle Brake Fluids, provided any brake fluid added or replaced is Motorcraft/Ford DOT 4 LV High-Performance Brake Fluid or equivalent meeting WSS-M6C65-A2 or the ISO 4925 Class 6 specification and contaminants are not introduced into the hydraulic brake system. Use of any other fluid other than the recommended fluid may cause degraded brake performance and not meet Ford Motor Company's performance standards.

118 The statement below is applicable to the Chassis Cab when completed as either a MPV or a Truck with a GVWR of 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 118, Power-Operated Window, Partition, and Roof Panel Systems, if the power-operated windows, motors, wiring, and key and switch activation systems, where provided by Ford Motor Company, are not removed, relocated, altered, or modified in any way. If additional power-operated window, partition, or roof panel systems are installed by subsequent stage manufacturers, they must conform to the requirements of Standard 118.

124 The statements below are applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 124, Accelerator Control Systems, if:

- No alterations are made to the accelerator pedal, mounting hardware, adjustable pedal mechanism, or other components of the accelerator control system as installed by Ford Motor Company.
- No equipment is added nor existing equipment modified which would restrict operation of the accelerator control system.
- No alterations are made to the Pedal Position Sensor and all associated hardware and wiring. See the figure below for component identification.

126 The statements below are applicable to the Chassis Cab if the GVWR is 4536kg [10,000 lb] or less: This vehicle will conform to Standard 126, Electronic Stability Control Systems for Light Vehicles, if:

- The completed vehicle vertical center of gravity (CGv) is less than the value in Table F and no modifications have been made to the components of the braking system, suspension system, wheels and tires.
- The unloaded completed vehicle weight (UVW) does not exceed the value in Table H.

If the vertical center of gravity (CGv) of the completed vehicle is greater than the value in Table F, Ford Motor Company makes no representation as to conformity with this Standard.

135 INFORMATION

Reference information that may be helpful for center of gravity calculations is available on the Ford Body Builders Advisory Service (BBAS) website https://fordbbas.com, under "Publications".

The Body Builder Layout Books contain chassis base curb weights, GAWR and dimensional information. Accessory weights are listed in the Ford eSourceBook, which can be found under "Vehicle Specifications". If you do not have access to this information online, please contact your Ford Dealer.

Abbreviation definitions and a vehicle diagram to assist with the equations for Standard 135 calculations are shown on a following page.

135 The statements below are applicable to the Chassis Cab if the GVWR is 3500 kg [7716 lb] or less:

This vehicle will conform to Standard 135, Light Vehicle Brake Systems, if:

- No alterations, modifications or replacements are made to the following:
  - Service or parking brake system
  - Antilock brake system
  - Brake system indicator lamp and wiring
  - Brake system reservoir labeling
  - Wheels and tires
  - Suspension ride height or spring rate
  - Wheelbase
- Removal of any Ford Motor Company installed body or chassis component is accompanied by the addition of equal weight.
- The service or parking brake pedal assembly operation is not restricted by any alteration or added components.
- The completed vehicle vertical center of gravity (CGv) is less than the value in Table F and no modifications have been made to the components of the braking system, suspension system, wheels and tires.
- The unloaded completed vehicle weight (UVW) does not exceed the value in Table H.
- The unloaded completed vehicle weight (UVW) is not less than the value in Table G.

***NOTE:**

Ford Motor Company provides Type I and Type II FMVSS/CMVSS 135 compliance statements for vehicles built to factory standard or optional specifications. Suspension ride height and/or spring rate modifications are factors that may affect compliance to this Standard. If an alterer or final stage manufacturer modifies the suspension ride height or spring rate of the factory-equipped vehicle, then they are responsible for engineering analysis or physical testing to ensure compliance and sign-off to Standard 135.

WARNING:

Do not wrap the brake lines with any material that could cause water, dirt, sand or other foreign material to accumulate around the lines, which could potentially result in brake line damage or corrosion.

EQUATION A

$$CG_v = \frac{CG_{vb}W_b + CG_{vc}W_c + CG_{vl}W_l + CG_{vp}P}{GVWR}$$

EQUATION B

$$CG_h = \frac{\left(W_{rb} + W_{rc} + \left(\frac{P \times CG_{hp}}{WB}\right) + W_{rl}\right) \times WB}{GVWR}$$

TABLE B
Passenger Load P (kg [lb])

Ranger	= 181 [400]

TABLE C
CGhp = Horizontal distance from front wheel C/L to Passenger load (mm [inches])

Ranger – Front Seat	= 1494 [58.8]

TABLE D
CGvp = Vertical distance from ground to CG of Passenger load (mm [inches])

Ranger – Front Seat	= 849 [33.4]

TABLE E
CGvc = Vertical distance from ground to incomplete chassis CG (mm [inches])

Ranger	= 674 [26.5]

TABLE F
CGv = Maximum vertical distance from ground to completed vehicle CG (mm [inches])

Ranger	= 772 [30.4]

TABLE G
Minimum Unloaded Vehicle Weight (UVW) with Second Unit Body (SUB) (FMVSS 135 Brake Compliance)

Ranger SuperCab	Wheelbase mm [inches]	Minimum UVW Weight kg [lb]
4x2	3220 [126.8]	1888 [4162]

TABLE H
Maximum Unloaded Vehicle Weight (UVW) with Second Unit Body (SUB) (FMVSS 135 Brake and FMVSS 301 Fuel System Compliance)

Ranger SuperCab	Wheelbase mm [inches]	Maximum UVW Weight kg [lb]
4x2	3220 [126.8]	2295 [5060]

FMVSS 135 DEFINITIONS AND CALCULATION ILLUSTRATION FOR INCOMPLETE RANGER

P = Passenger load (kg [pounds])

CGh = Horizontal distance from C/L of the front wheels to the center of gravity of the completed vehicle (mm [inches])

CGhc = Horizontal distance from the C/L of the front wheels to the center of gravity of the chassis, including cab (mm [inches])

CGhl = Horizontal distance distance from the C/L of the front wheels to the cargo center of gravity. CGhl may be estimated as the distance from the front wheel to the horizontal midpoint of the cargo area (mm [inches])

CGhp = Horizontal distance from the C/L of the front wheels to P (passenger load) (mm [inches]) (Table C)

CGv = Vertical distance from the ground to the center of gravity of the completed vehicle (mm [inches])

CGvb = Vertical distance from the ground to the center of gravity of the SUB and/or permanently attached added equipment (mm [inches])

CGvc = Vertical distance from the ground to the center of gravity of the chassis, including cab (mm [inches]) (Table E)

CGvl = Vertical distance from the ground to the center of gravity of the load (mm [inches])

CGvp = Vertical distance from the ground to the center of gravity of P (passenger load) (mm [inches]) (Table D)

GVWR = Gross Vehicle Weight Rating of the vehicle (kg [pounds])

WB = Vehicle wheelbase (mm [inches])

Wb = Weight of the SUB and/or permanently attached added equipment (kg [pounds])

Wc = Weight of the vehicle (chassis and cab, fuel tanks full) including option weight (kg [pounds])

Wl = Load (remaining cargo capacity) (kg [pounds]):

$$W_l = GVWR - (W_b + W_c + P)$$

Wrb = Weight at the rear wheels of the SUB and/or permanently attached added equipment (kg [pounds])

Wrc = Weight at the rear wheels of the vehicle (chassis and cab, fuel tanks full) including option weight (kg [pounds])

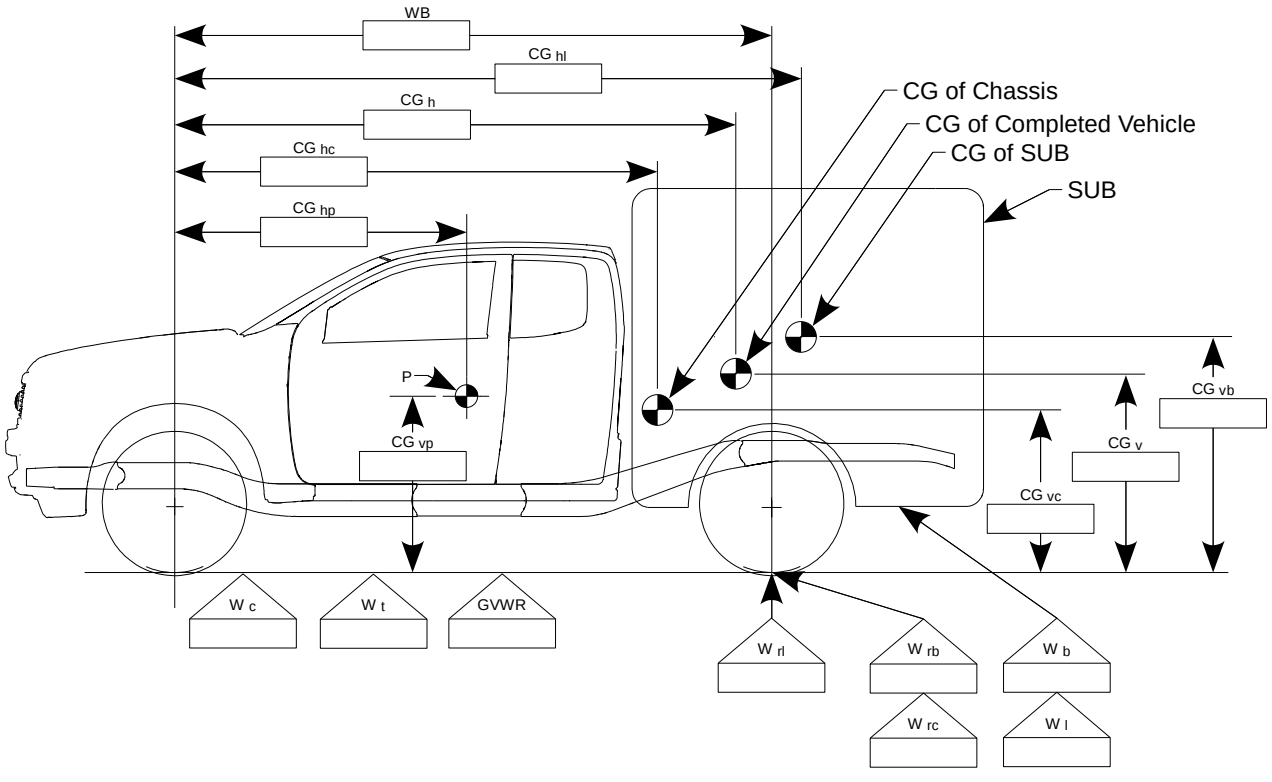
Wrl = Weight of the remaining cargo capacity on the rear wheels (kg [pounds]):

$$W_{rl} = \frac{(CG_{hl})\, W_l}{WB}$$

Wt = Total unladen weight (kilograms [pounds]):

$$W_t = (W_b + W_c + P)$$

SUB = A Second Unit Body consists of the body structure and/or all the cargo carrying, work performing, and/or load bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle.



138 The statements below are applicable to the single rear wheel (SRW) Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less (if equipped):

The Tire Pressure Monitoring System (TPMS) is subject to interference from the addition of metallic structures between the wheel-mounted sensor transmitters and the on-board receiver.

This vehicle, when completed, will conform to Standard 138, Tire Pressure Monitoring Systems, if:

- No alterations are made to the tire pressure sensors (valve stems), wheels, tires, recommended tire pressures, electrical Body Control Module, TPMS receiver, instrument cluster, instrument panel wiring, or software calibrations.
- Wheelbase is not lengthened.
- No equipment that emits radio frequency (RF) energy is added to the vehicle.
- After vehicle upfit, function of the Tire Pressure Monitoring System is verified in accordance with FMVSS 138 and in accordance with information provided in the vehicle's *Owner's Manual*.

139 The statements below are applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less :

All tires supplied by Ford Motor Company are in full conformity with Standard 139, New Pneumatic Radial Tires for Light Vehicles.

If additional tires are installed or the existing tires are replaced by subsequent stage manufacturers, they must conform to the requirements of Standard 139.

201 The statements below are applicable to the Chassis Cab with a GVWR of 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 201, Occupant Protection in Interior Impact (excluding U.S. Section S6 requirements addressed separately), if the following components, as provided by Ford Motor Company, are not removed, relocated, altered, or modified in any way:

- Instrument panel
- Interior compartment doors
- Headliner
- Sun visors
- Arm rests

Seat backs of front seats installed by Ford Motor Company are designed to meet the seat back requirements of Standard 201.

If any of the above mentioned components (including front seats) are added to the incomplete vehicle by a subsequent stage manufacturer, these components must conform to the requirements of Standard 201 where applicable.

Because conformity of a completed vehicle to the seat back requirements of this standard is dependent upon the location of a seat installed by a subsequent stage manufacturer to the rear of another seat, Ford Motor Company makes no representation as to compliance of a completed vehicle to the seat back requirements if such a seat is installed.

If a vehicle is equipped with a Passenger-side Air Bag Delete option, a RH passenger seat should never be installed. If such a seat is installed, Ford Motor Company makes no representation as to the compliance of the completed vehicle to Standard 201.

201U U.S. Requirements (Section S6):

The statements below are applicable to the Chassis Cab with a GVWR of 4536 kg [10,000 lbs] or less:

This incomplete vehicle will conform to Standard 201 Section 6, Occupant Protection in Interior Impact – Requirements for Upper Interior Components, if in the process of completing the vehicle none of the following components, as provided by Ford Motor Company, are removed, relocated, altered, or modified either physically or chemically:

- A, B, rear, or other pillar and trim and assist handles
- Seat belt 'D'-rings/adjusters and 'D'-ring covers and sling systems
- Canopy air curtain
- Front or rear header, headliner and trim
- Side rails, trim, coat hooks and ride handles
- Upper roof and trim
- Exterior windshield trim
- Exterior roof drain ditches
- Primary and secondary door/body seals at all door opening locations in the vehicle
- Sunvisors and attachment hardware
- Changes to the design Seating Reference Point (SRP) with modifications to the seat system

Note: Standard 201 Section 6 requires compliance of all upper interior components located forward of a vertical plane 300 mm behind the seating reference point of the driver's designated seating position.

Note: If an alterer or final stage manufacturer adds any component located within 300mm rearward of the driver's designated seating reference point (this includes any of the components listed above, or aftermarket equipment), these components will have to conform to the requirements of Standard 201 Section 6 where applicable.

202a The statements below are applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle when completed, will conform to Standard 202a, Head Restraints, if:

No alterations are made to the head restraints, the seat assemblies and their anchorages, the floor pan, or floor pan reinforcements.

203 The statement below is applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 203, Impact Protection for the Driver from the Steering Control System, if:

The steering control system is not removed, relocated, altered, or modified in any way.

No components or attachments are added to the steering control system that can catch the driver's clothing or jewelry during normal driving maneuvers.

203 Canadian Requirements:

The preceding statements for FMVSS 203 are appropriate compliance representations for CMVSS 203, Driver Impact Protection and Steering Control System, if this incomplete vehicle was manufactured for sale or use in Canada.

204 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 204, Steering Control Rearward Displacement, if:

- The Unloaded Vehicle Weight (UVW) does not exceed the Maximum UVW in Table H.
- No components are added which could influence the rearward displacement of the steering column.
- The steering column, steering intermediate and coupling shaft, steering wheel, steering gear, steering linkage, related structural components, and attaching hardware, as installed by Ford Motor Company, are not altered, relocated, modified or removed in any way.
- No alterations or modifications are made to the body, chassis, drivetrain, or front suspension from the B-pillar forward.

205 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 205, Glazing Materials, if no alterations to or replacements of the installed glazing materials are made, and if additional glazing material installed by a subsequent stage manufacturer conforms to the requirements of Standard 205.

206 The statements below are applicable to the Chassis Cab when completed as a Truck:

This vehicle, when completed, will conform to Standard 206, Door Locks and Door Retention Components, if no alterations or adjustments are made to the door, door pillar structure, door locks, door latches, striker plates, hinges, and attaching hardware as installed by Ford Motor Company.

Any door added to this vehicle by a subsequent stage manufacturer must be equipped with door locks and door retention components that conform to the requirements of Standard 206.

207 The statements below are applicable to the Chassis Cab when equipped with Ford trimmed front seats:

This vehicle, when completed, will conform to Standard 207, Seating Systems, if no alterations are made to the seat assemblies, their anchorages, the floor pan, or floor pan reinforcements. Any seating system added to this vehicle must conform to applicable requirements of Standard 207.

208 The statements below are applicable to the Chassis Cab when equipped with Ford trimmed front seats:

This vehicle, when completed, will conform to Standard 208, Occupant Crash Protection, if:

- The seat belts, seat belt warning system, and attaching hardware installed by Ford Motor Company are not removed, relocated, altered, or modified.
- No actions are taken which would impair the integrity of the belt and seat belt warning systems.
- Any rear seats installed by Ford Motor Company that are temporarily removed for any reason are returned to their original location and condition in the vehicle.
- The Air Bag Supplemental Restraint System (Driver, Passenger, Seats, Canopy Air Curtain) as installed by Ford Motor Company is not removed, relocated, modified or altered in any way (see Figures A & B).
- The Air Bag Supplemental Restraint System Information Labels that are affixed to the front visors are visible and not altered, modified, or removed.

Any seat belt assemblies added to this vehicle must conform to the applicable requirements of this Standard.

WARNING:

Vehicles, including those under 3856 kg [8500 lb] GVWR and/or under 2495 kg [5500 lb] UVW, are equipped with a front row occupant supplemental restraint system (front/side/curtain airbags, wiring, and sensors) and pyrotechnic buckle pretensioners. Modifications to the vehicle forward of or near crash sensors may affect the deployment of the airbags and pretensioners.

209 The statements below are applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 209, Seat Belt Assemblies, if:

- No alterations or replacements are made to the seat belt assemblies and attaching hardware.
- No action is taken that would impair the integrity of the seat belt system provided.

Any seat belt assemblies added to a vehicle must conform to the requirements of this Standard.

209 Canadian Requirements:

The preceding statements for FMVSS 209 are appropriate compliance representations for CMVSS 209, Seat Belt Assemblies, if this incomplete vehicle was manufactured for sale or use in Canada.

210 The statements below are applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 210, Seat Belt Assembly Anchorages, if:

- No alterations are made to the front seat belt anchorages, front seat belt assemblies, floor pan, floor pan reinforcements, or body mounts.
- No alterations are made to the rear cab panel, window or roof.

Chassis Cab vehicles may have additional seat belt anchorages for designated seating positions on optional seats not provided on incomplete vehicles. These locations apply to specific hardware and designated seating positions used in Ford completed vehicles. If these anchorages are used without the appropriate Ford seats, seat belt systems, and hardware, Ford Motor Company makes no representation as to conformity with this Standard.

212/ 219 NOTE

The terms “body” or “body structure,” in the 212 and 219 statements that follow, include any equipment permanently attached to that body or body structure installed by the subsequent stage manufacturer as well as the basic body or body structure.

212/ 219 INFORMATION

Refer to the Ranger Body Builders Layout Book on the web at https://fordbbas.com under "Publications" for Second Unit Body attachment information that may aid in designing second unit bodies and their and their attachments to be compatible with Ranger vehicles.

212/ 219 *(Continued next page)*

† *Temporary removal of the front bumper and front bumper mounting system during manufacture and re-installation in accordance with the instructions provided in the Ford Truck Shop Manual should not adversely affect the compliance of a completed vehicle to Standards 212 and 219.*

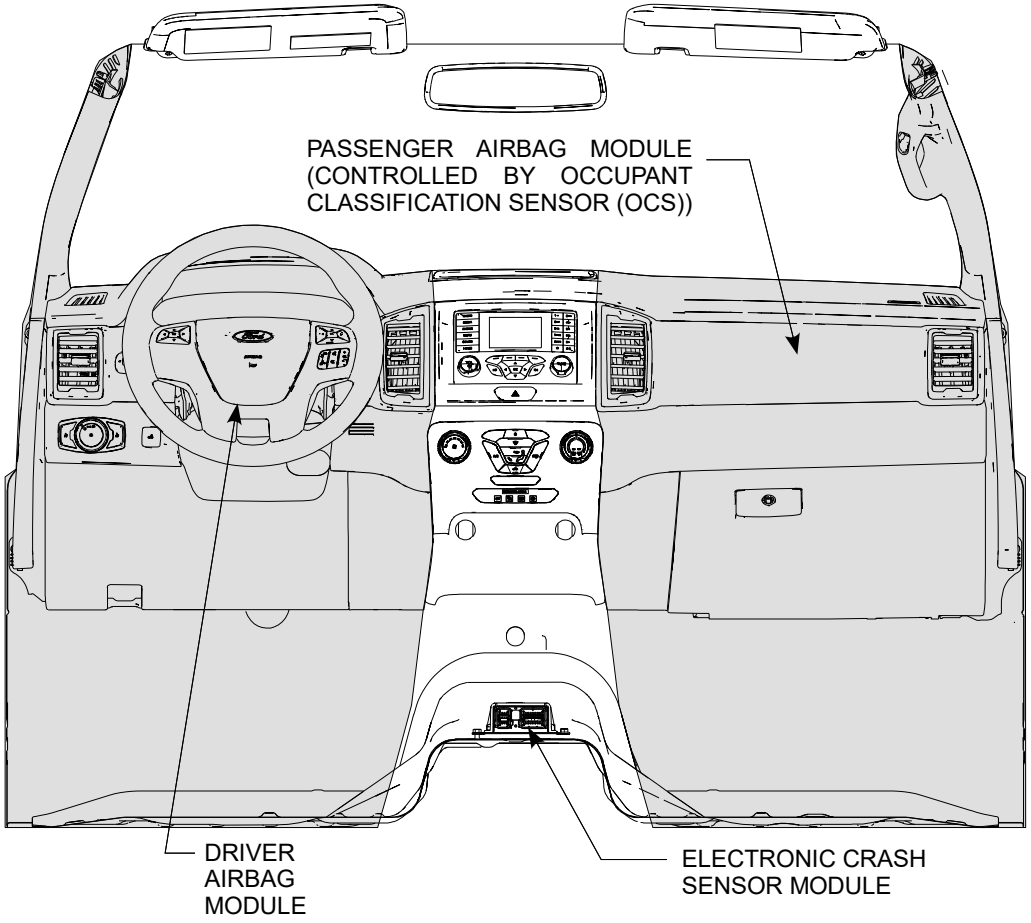
212/ The statements below are applicable to the Chassis
219 Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 212 Windshield Mounting, and Standard 219, Windshield Zone Intrusion, if:

- The following windshield system components, related structural components, and hardware, as installed by Ford Motor Company, are not removed, relocated, altered, or modified in any way except as specified in this manual:
  - Windshield and windshield mounting system
  - Cab and front end structural components including the roof, pillars, cowl, cowl reinforcements, hood, doors, fenders, hood restrictors and apron reinforcements, and frame and frame reinforcements
  - Radio antenna and air cleaner assembly
  - Doors and hood mounting, hinging, and latching systems
  - Hood ornamentation
  - Front bumper and bumper mounting system †
- No alteration or modification made to the incomplete vehicle as manufactured by Ford Motor Company and no components or structure installed by a subsequent stage manufacturer results in any loss of windshield retention (as defined in Standard 212) or any penetration of the inner surface of the windshield or intrusion into the protected zone (as defined in Standard 219) when the vehicle is impacted in any manner specified by applicable provisions of Standard 212 or Standard 219.
- The unloaded completed vehicle weight should not exceed the maximum Unloaded Vehicle Weight (UVW) shown in Table H.
- The body installed by the subsequent stage manufacturer is mounted securely and so designed that, when the completed vehicle is impacted in any manner specified by applicable provisions of Standards 212 and 219, body deformation or movement relative to the frame does not result in any separation or loss of body attachment to the frame.

(Continued next column)

212/ *(Continued)*
219


PASSENGER AIRBAG MODULE (CONTROLLED BY OCCUPANT CLASSIFICATION SENSOR (OCS))
DRIVER AIRBAG MODULE
ELECTRONIC CRASH SENSOR MODULE

Do not install additional components in the shaded areas, nor alter or modify these areas.

Do not modify nor alter any components or areas of the vehicle in the vicinity of the components that are identified in this illustration.

Do not modify nor alter the front crash sensor located under the radiator on the front lower tie bar.

FIGURE A - RANGER OCCUPANT PROTECTION ZONE

213 The statement below is applicable to the Chassis Cab:

Conformity with Standard 213, Child Restraint Systems, cannot be determined based upon the components supplied on the incomplete vehicle; accordingly Ford Motor Company makes no representation as to conformity with this Standard. Any child restraint system that is added or incorporated into the design of a designated seating position must conform to the requirements of this Standard.

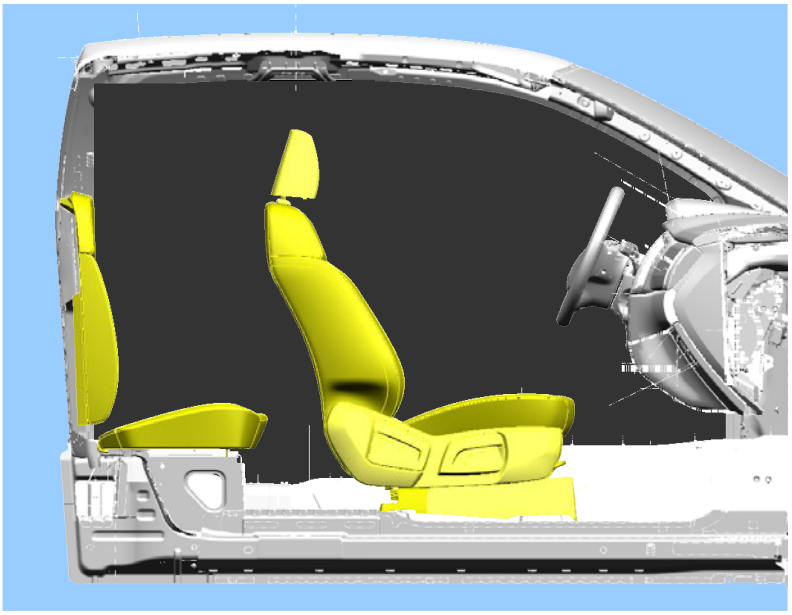
214 The statements below are applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, if equipped with both front doors as manufactured by Ford Motor Company when completed, will conform to Standard 214, Side Impact Protection (Static), if:

- No alterations, modifications, or replacements are made to the door, surrounding door and body structure, the entire roof structure, door hinges, door latches and strikers, or any attaching hardware provided by Ford Motor Company.
- This vehicle, if equipped with a driver-side door only when completed, will conform to Standard 214, Side Impact Protection (Static), for that door only if no alterations, modifications, or replacements are made to the door, surrounding door and body structure, the entire roof structure, door hinges and strikers, or any attaching hardware provided by Ford Motor Company.

Any side door and surrounding door and body structure added to this vehicle, if a designated seating position is less than 254 mm [10 in] inboard of that door, must conform to the requirements of this standard.

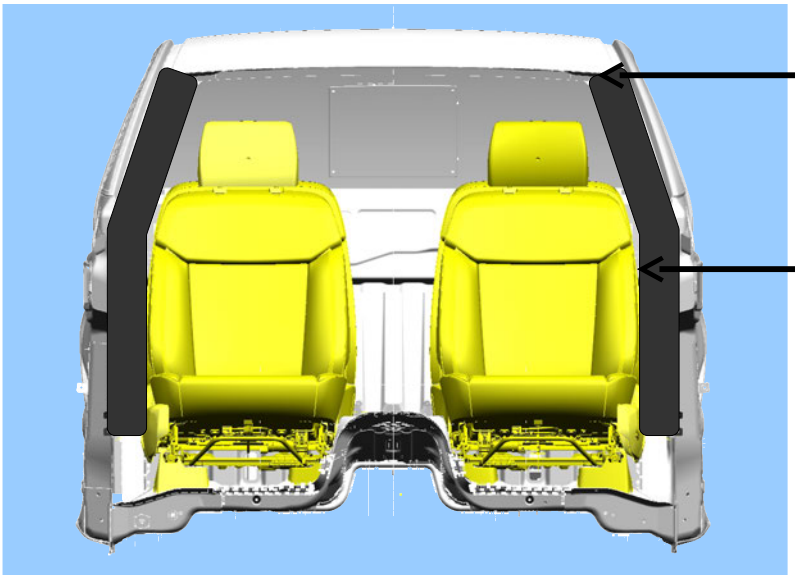
(Continued next page)



Do not install additional components in the shaded areas, nor alter or modify these areas.

Do not modify nor alter any components or areas of the vehicle in the vicinity of the components that are identified in this illustration.

Do not modify nor alter any crash sensor.



CANOPY AIR CURTAIN MODULE INSIDE HEADLINER

SEAT SIDE AIRBAG MODULE INSIDE SEAT BOLSTER

FIGURE B – AIRBAG SUPPLEMENTAL RESTRAINT SYSTEM – NOT TO BE REMOVED, RELOCATED OR ALTERED

214 *(Continued)*

214 The statements below are applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 214, Side Impact Protection (Dynamic vehicle to pole requirements), if:

- No alterations, modifications, or replacements are made to all installed trim, headliner, doors, surrounding door and body structure, door hinges, door latches, door strikers, roof structure or any attaching hardware as provided by Ford Motor Company.
- The airbag Supplemental Restraint System (side airbags, seats, canopy air curtain) as installed by Ford Motor Company is not removed, relocated modified nor altered (see Figure B).
- The seat belts, seat belt warning system, and attaching hardware installed by Ford Motor Company are not removed, relocated modified nor altered.
- The sensor system (sensors, RCM, wiring) and attaching hardware installed by Ford Motor Company are not removed, relocated modified nor altered.
- No actions are taken which would impair the integrity and functions of the airbags, curtains, and seat belts.

Because deletion of frontal passenger, driver/passenger side airbags, and curtain airbags or the addition of seats would change compliance with this Standard, Ford Motor Company makes no representations as to conformity with this Standard for any vehicle that has airbags deleted by order option or seats added by intermediate or final stage manufacturers.

216a The statements below are applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 216a, Roof Crush Resistance, if:

- No alterations are made to the following components as installed by Ford Motor Company:
  - Cab and front end structural components including the cowl, cowl reinforcements, and front hinge pillar.
  - A and B pillars.
  - Front header and any roof bow.
  - Front and side door structure, door hinges or roller system, and door latching system.
  - Spot welds joining the stated parts.
  - Windshield and windshield mounting system.
- The unloaded completed vehicle weight should not exceed the maximum Unloaded Vehicle Weight (UVW) shown in Table H.

226 The statement below is applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will comply with Standard 226, Ejection Mitigation, if:

- No alterations, modifications, or replacements are made to all installed trim, headliner, windows, window surrounding body structure, window treatments including grill covers, doors, surrounding door and body structure, door hinges, door latches, door strikers, roof structure or any attaching hardware as provided by Ford Motor Company.
- The airbag Supplemental Restraint System (side airbags, seats, canopy air curtain) as installed by Ford Motor Company is not removed, relocated modified nor altered (see Figures A & B).
- The seat belts, seat belt warning system, and attaching hardware installed by Ford Motor Company are not removed, relocated, modified nor altered.
- The sensor system (sensors, Restraints Control Module, wiring) and attaching hardware installed by Ford Motor Company are not removed, relocated, modified nor altered.
- No actions are taken which would impair the integrity and functions of the airbags, curtains, seat belts, windows and bulkheads.
- The body and all substructure including bulkheads aft of occupant seating, as installed by Ford Motor Company, is not removed, relocated, modified nor altered.

Because addition or deletion of frontal passenger, driver/passenger side airbags, curtain airbags, seats, bulkheads, doors or windows would change compliance with this Standard, Ford Motor Company makes no representations as to conformity with this Standard for any vehicle that has airbags, seats, bulkheads, doors or windows deleted by order option, or added or deleted by intermediate or final stage manufacturers.

226 Canadian Requirements:

The regulatory text of CMVSS 226 states:

"***Modified roof*** *means a roof on a vehicle that has been modified in whole or in part, or a roof added to a vehicle that did not have an original roof. (toit modifié)*"

In the case of a vehicle with a modified roof, a fixed security partition, or a seat that has been modified for a disabled person, which does not meet the performance requirements of Ejection Mitigation, a label must be provided in the vehicle and information included in the owner manual. See CMVSS 226 Sections 3 through 7 for details.

NOTE:

The regulatory text of FMVSS 226 states:

"***Modified roof*** means the replacement roof on a motor vehicle whose original roof has been removed, in part or in total, or a roof that has to be built over the driver's compartment in vehicles that did not have an original roof over the driver's compartment."

301 NOTE

The terms “body” or “body structure”, in the Standard 301 statements that follow include not only the basic body or body structure, but also any equipment permanently attached to that body or body structure installed by the subsequent stage manufacturer.

The Unloaded Vehicle Weight of the completed vehicle may significantly affect its capability to meet the requirements of FMVSS 301, Fuel System Integrity. Completed vehicles manufactured by Ford Motor Company that are tested to demonstrate compliance with FMVSS 301 are loaded pursuant to S7.1.6 of the Standard. The test weights of these vehicles comprise the Unloaded Vehicle Weights including the weights of all available regular production options plus the loads specified by S7.1.6. These test weights are less than the respective designated Gross Vehicle Weight Ratings. In addition to the specific statements below, refer to the Design Recommendation section of the

Ford Truck Body Builders Layout Book for fuel system information to assist in designing fuel systems and the second unit body (SUB) attachment recommendations.

If a fuel line is to be disconnected, refer to the appropriate Ford Service Manual for proper removal and installation procedures.

When welding near fuel system components, all metallic components must be adequately shielded and protected from heat or weld splatter. All non-metallic components must be removed.

301 The statements below are applicable to the Chassis Cab if the vehicle GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 301, Fuel System Integrity, if:

- The following fuel system and frame components, as installed by Ford Motor Company, are not removed, relocated, altered, or modified in any way (except as specified in the representations following this paragraph):
  - Fuel tank(s) and attachment hardware, including sending unit, vapor valve, fuel tank shield, pressure transducer, and in-tank electric fuel pump
  - Fuel filler cap(s), pipe(s), hose(s), and attachment hardware
  - Fuel lines, routing, and attachments
  - Vapor line(s) and carbon canister (gasoline engine only)
  - Fuel pump
  - Fuel filter
  - Fuel water separator, fuel filter/primer, fuel line heater, and injection pump (diesel engine only)
  - Fuel shutoff function via crash sensor module
- No other alteration or modification made to the incomplete vehicle, as manufactured by Ford Motor Company, and no other components or structure installed by a subsequent stage manufacturer result in penetration (especially added fasteners pointed downward towards the fuel tank or other fuel system components), separation, or other damage to the fuel system or any portion thereof when the vehicle is tested in any manner specified by applicable provisions of Standard 301.
- The completed vehicle (as upfit) vertical center of gravity (CGv) is less than or equal to the max CGv value in Table F and no modifications have been made to the components of the braking system, suspension system, wheels and tires.

(Continued next column)

301 *(Continued)*

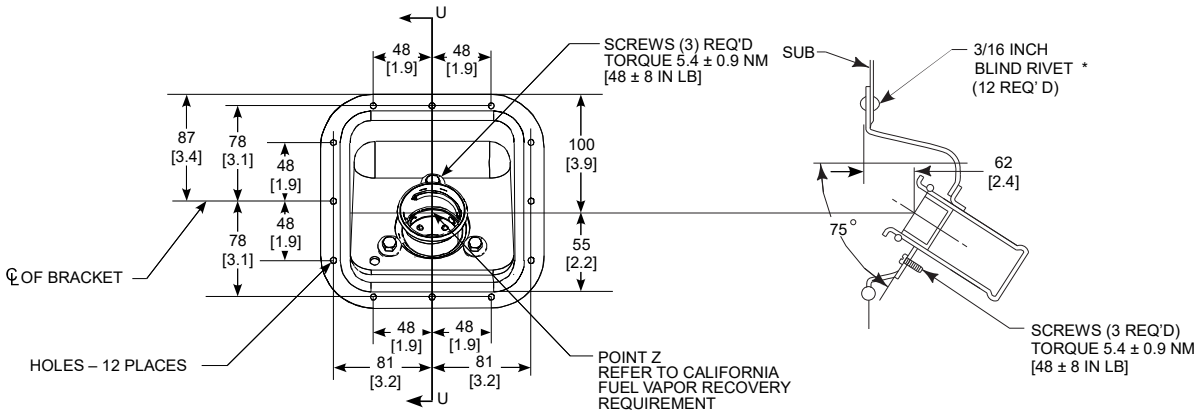
- The unloaded completed vehicle weight should not exceed the maximum Unloaded Vehicle Weight (UVW) shown in Table H.
- The body installed by a subsequent stage manufacturer and the Ford-installed fuel system components are located and mounted as follows:
  - The body is mounted securely and is so designed that when the completed vehicle is tested in any manner specified by applicable provisions of Standard 301,
    a) body components do not contact any fuel system component at any time (other than at the points where the fuel system is permanently attached to the body), and,
    b) body deformation or movement relative to the frame does not cause any fuel system component to be penetrated, disconnected, or otherwise damaged.
  - Any extension of the vehicle frame must be constructed and attached so as to perform as a continuation of the vehicle frame when the completed vehicle is tested in any manner specified by applicable provisions of Standard 301.
  - Except for a service body upfit with a rear bumper, there must not be any components that tie a second unit body (SUB) to the frame rearward of a rear spring's rear hanger/shackle bracket. Note that components for lateral support may be bolted or welded to either the chassis (only) or the second unit body (only).
  - The fuel filler cap(s), pipe(s), hose(s), and attachment hardware are installed as shown in Figure C. All components must be securely retained to remain intact when the completed vehicle is tested in any manner specified by applicable provisions of Standard 301.
  - If a spare wheel is mounted beneath the frame, the attachment method, location, installation angle and installation hardware must not be modified. The size of the spare wheel mounted under-frame must not exceed 18 inches.

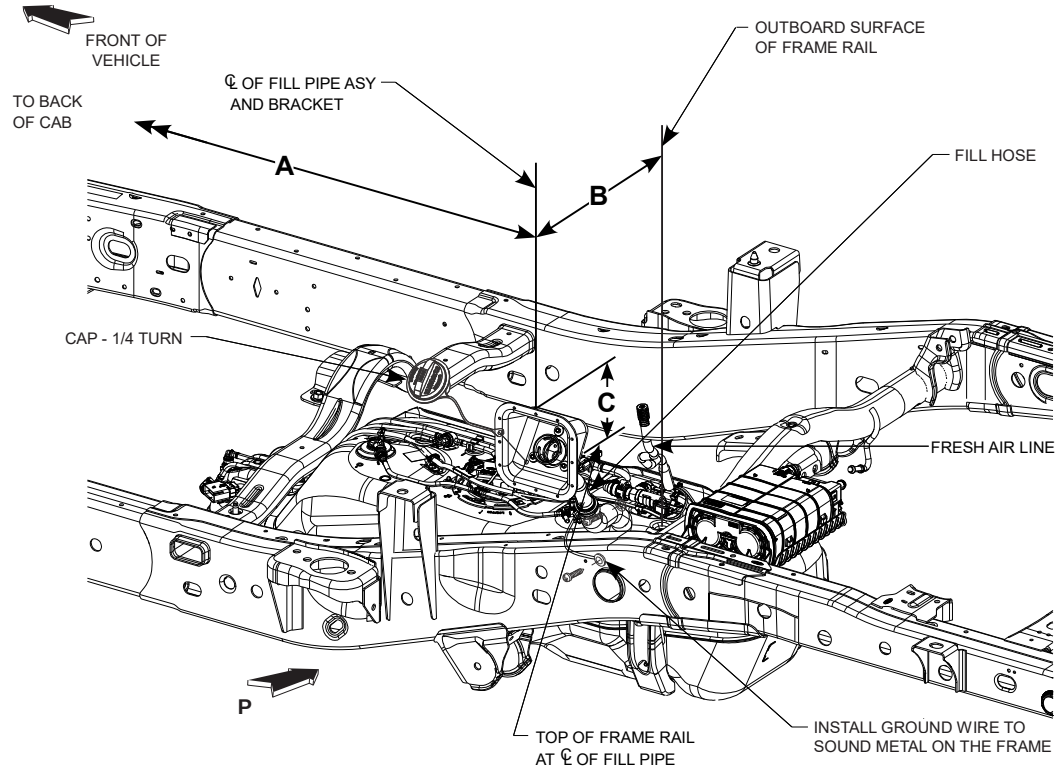
301 Canadian Requirements:

The Canadian loading requirements are provided in Section 3.3 of “*Test Method 301 Fuel System Integrity”*, revised: February 8, 2001, and should be substituted wherever references to FMVSS 301, Section 7.1.6, loading requirements have been made in the statements of conformity for Standard 301.

NOTE: Nylon Fuel Tubes

Some incomplete vehicles are equipped with nylon fuel tubes. In the event that the tubes require repair or replacement, only Ford approved parts or their equivalents should be used.





MODEL	WHEELBASE (31 Inch CA)
Super Cab	3220 [126.8]

FUEL FILLER CUP LOCATION		
▽ A	MIN	280 [11.0]
	MAX	330 [13.0]
▽ B	MIN	327 [12.9]
	MAX	429 [16.9]
▽ C	MIN	267 [10.5]
	MAX	292 [11.5]

CA = Dimension from back of cab to ℄ of rear axle

NOTES:

▽ TORQUE ALL WORM GEAR DRIVEN HOSE CLAMPS TO 4.8 ± 0.8 NM [43 ± 7 IN LB]

[ ] DIMENSIONS ARE INCHES

* RIVETS NOT SUPPLIED BY FORD MOTOR COMPANY

▽ CRITICAL CONTROL ITEM

The 40 inch fuel hose is formed and is retained after modification; it has a recommended 36 inch cutoff paint mark. The small recirculation hose is not altered.

The fresh air line tube end must be above the fuel filler at a minimum of 11 inches above the frame.

Use the scuff guards, tie wraps, and clamps provided in the dunnage kit.

Do not extend the fuel fill system outboard of the second unit body.

It is recommended that there be no additional alteration to the fuel tank, fuel filler, metering unit, purge control solenoid, canister and associated lines; such alteration could void Federal and California Vehicle Emission Standards compliance.

FIGURE C – RANGER PICKUP BOX DELETE FUEL FILLER PIPE (GASOLINE)

301.1 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with CMVSS Standard 301.1, LPG Fuel System Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

301.2 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with CMVSS Standard 301.2, CNG Fuel System Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

302 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 302, Flammability of Interior Materials, if:

- No alterations are made to those components covered by this Standard which are installed by Ford Motor Company.
- All components covered by Standard 302 which are added to the incomplete vehicle by subsequent stage manufacturers meet the flammability requirements of this Standard.

303 U.S. Requirements:

The statement below is applicable to the Chassis Cab if the GVWR Is 4536 kg [10,000 lb] or less:

This incomplete vehicle does not comply with Standard 303, Fuel System Integrity of Compressed Natural Gas Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

304 U.S. Requirements:

The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with Standard 304, Compressed Natural Gas Fuel Container Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

305 The statement below is applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This incomplete vehicle does not comply with Standard 305, Electric-Powered Vehicles: Electrolyte Spillage and Electrical Shock Protection; Ford Motor Company makes no representation as to conformity with this Standard.

403 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with Standard 403, Platform Lift Systems for Motor Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

404 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with Standard 404, Platform Lift Installations in Motor Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

Part 565 U.S. Requirements:

This vehicle, when completed, will conform to Part 565, Vehicle Identification Number (VIN) Requirements, if the vehicle identification number printed on the label affixed to the cover of this manual is mounted and displayed in accordance with the requirements of this Standard.

Part 565.13 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Part 565.13, General Requirements, if the Vehicle Identification Number tag mounted on the top of the instrument panel is not removed, altered, or modified and no actions are taken by the subsequent stage manufacturer that would obstruct the readability of the Vehicle Identification Number tag mounted on the top of the instrument panel.

Part 567 / CMVSR Section 6.6

The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with the intermediate and final stage manufacturer requirements of Part 567 - Certification, nor the Canadian Motor Vehicle Safety Regulations, Section 6.6 – Final-stage Manufacturer's Compliance Label. It is the responsibility of the intermediate and final stage manufacturers to provide additional labeling to meet these requirements. Ford Motor Company makes no representation as to conformity.

1106 Canadian Requirements:

The statements below are applicable to the Chassis Cab if the GVWR is 4536 kg [10,000 lb] or less:

This vehicle, when completed, will conform to Standard 1106, Noise Emissions, Section 2, if noise control devices or elements of design are not modified, removed, or rendered inoperative. Examples of such devices or elements of design are:

Fender apron absorbers, fender apron barriers, underbody noise shields and acoustic absorption material.

Engine speed governor or electronic control intended to control maximum engine speed.

Engine air duct, air intake choke or silencer, air cleaner and air cleaner element.

Exhaust system components including the catalyst inlet pipe, muffler, outlet pipe, resonator and diffuser.

Engine cooling fan and cooling fan clutch.

CANADIAN VEHICLES

(Vehicles to be completed for sale or use in Canada)

VEHICLE IDENTIFICATION

Refer to the “Vehicle Description” section of this manual for additional information. Incomplete vehicles produced by Ford Motor Company require, for certain applications, optional Prep Packages or trim codes which are listed on the Completed Vehicle Types chart.

DAYTIME RUNNING LAMP (DRL)

Compliance representations for CMVSS 108, Lighting System and Retroreflective Devices, are in the “Statements of Conformity” section of this manual.

CANADIAN RADIO FREQUENCY INTERFERENCE (RFI) INFORMATION

All vehicles powered by spark ignition engines (e.g.: gasoline, natural gas, or propane engines) and manufactured in Canada or for sale or use in Canada are subject to Canadian Radiocommunication Regulations per Interference-Causing Equipment Standards (ICES-002) and applicable test method according to “CAN/CSA-C108.4-06”. Violation of these regulations is punishable by fine or imprisonment. This Ford-built incomplete vehicle was designed and manufactured to be capable of meeting the regulatory requirements or such modifications thereof as may have been authorized by the Department of Communications. However, because Ford Motor Company has no control over how this incomplete vehicle is completed by subsequent stage manufacturers, Ford Motor Company does not represent that the completed vehicle incorporating the Ford-built components will comply with applicable requirements.

The following information is supplied to subsequent stage manufacturers to help them avoid increasing the RFI emissions of this vehicle in the course of completing it.

For any completed vehicle, additional measures may be needed to adequately suppress RFI emissions. Affected components could include spark plugs, ignition wires, ignition coils, ground straps, ignition component shields, accessory drive belts, instrument voltage regulator suppressor assembly, and ignition coil suppressor assembly.

(Continued next column)

More specifically:

- All components required to suppress RFI emissions, which are removed during service, repair, or completion of the vehicle, must be reinstalled in the manner in which they were installed by Ford Motor Company.
- Shields on ignition coils must remain installed.
- Replacement spark plugs, ignition wires, and ignition coils must be equivalent in their RFI suppression properties to original equipment.
- Electrical grounds on all components must be retained.
- Metallic components installed on the body or chassis must be grounded to the chassis.
- Electrical circuits added to the vehicle must not be installed near the high voltage ignition components.
- Only “static conductive” accessory drive belts should be used. Fan, water pump, power steering, and other belts should be of the OEM type or equivalent that will not build up a static electrical charge.
- Engine compartment wiring must not be rerouted in any manner.
- The Powertrain Control Module (PCM) must not be relocated from the position as installed by Ford Motor Company.

Additional guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs/download/Mobile_Radio_Guide.pdf.

EMISSION CERTIFICATION INFORMATION

CAUTION:

U.S.:

Vehicles are emission certified for registration in specific areas of the United States. For example, **vehicles certified and labeled for sale in California can not be sold in the states that require Federally certified vehicles and vehicles certified to Federal standards can not be sold in states that require California certified vehicles.** It is the subsequent stage manufacturer's responsibility to purchase a vehicle certified for the state/area in which the vehicle will be sold. EPA has stated that under certain circumstances they will not enforce these requirements. For further guidance consult EPA's "policy on cross border sales of California vehicles."

CANADA:

If the completed vehicle is intended for sale or use in Canada, the intermediate or final stage manufacturer must insure that the incomplete vehicle is ordered through a Canadian dealer or is ordered from Ford Motor Company with the appropriate Canadian market option code. Failure to do so may result in an incomplete vehicle that is built with an emissions system and labeling that are not in compliance with the requirements of the Canadian Environmental Protection Act.

VEHICLE EMISSION CONTROL INFORMATION LABEL

To meet United States Environmental Protection Agency regulations, the Vehicle Emission Control Information (VECI) label must be affixed in the engine compartment in a location that is readily visible after installation and in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment that is easily detached from the vehicle.

The Chassis Cab VECI label is affixed to the forward underside of the engine hood. No components shall be installed which visibly obscure the label in any way.

For Canadian requirements, consult On-Road Vehicle and Engine Emission Regulations (SOR).

EPA SPECIAL EMERGENCY VEHICLE EMISSIONS

United States Environmental Protection Agency (EPA) regulations allow unique Federal emission calibrations for ambulance and fire/rescue vehicles; these calibrations are not California Air Resources Board (CARB) approved.

IMPORTANT:

It is the responsibility of the body builder, installer, or subsequent stage manufacturer to ensure that the maximum completed vehicle curb weight and frontal area specified by Ford Motor Company are not exceeded. If these restrictions are exceeded, or if the vehicle is modified such that it will not comply with applicable emission standards throughout its useful life, the body builder, installer, or subsequent stage manufacturer will be considered a manufacturer for purposes of complying with U.S. Federal, California, or Canadian exhaust and evaporative emission requirements, and Federal fuel economy standards, labeling, and certain other requirements.

IMPORTANT:

For purposes of Government Regulation, a body builder, installer, or any subsequent manufacturer may be considered a manufacturer.

FRONTAL AREA AND WEIGHT RESTRICTIONS

Some light-duty incomplete vehicles are certified using chassis certification protocol and will require vehicle weight and frontal area restrictions (to retain emission certification). If your vehicle is affected, the frontal area and unloaded vehicle weight information will be found on the VECI label, which is located in the engine compartment.

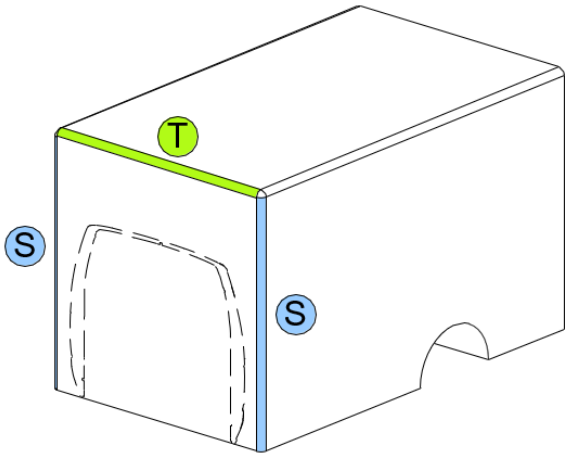
It is important that the final stage manufacturer observe vehicle restrictions from vehicle safety requirements located elsewhere in this manual. Additional certification information is contained in the *Ford Body Builders Layout Book* for the model year and type of incomplete vehicle.

The following Frontal Area and Maximum Unloaded Vehicle Weight restrictions apply to the completed vehicle:

- **Pickup Box Delete model with 2.3L Gas Engine:**
  [NOTE: Export vehicles use U.S. Emissions]
  - Max frontal area
    - Up to 3.75 m^2 [40.3 ft^2] with no radii restrictions
    - Greater than 3.75 m^2, up to 4.12 m^2 [44.3 ft^2] must meet radii restrictions shown in Figure D
  - Max UVW – 2295 kg [5060 lb]

NOTE: Frontal area requirement includes the cab and second unit body.

FIGURE D – SECOND UNIT BODY RADII RESTRICTIONS FOR ENHANCED FRONTAL AREA



SIMPLE BOX

Rt ≥ 60 mm [2.4in] AND

AVERAGE EDGE RADIUS $\frac{2S*Rs + T*Rt}{2S + T} \geq$ 60 mm [2.4 in]

T, S = Length of box edge

Rt, Rs = Radius along box edge

NOTE: Top radius is most critical to good aerodynamics – the larger the better.

EMISSION CONTROL HARDWARE

Any body builder, installer, or subsequent stage manufacturer must also assure that all emission control hardware furnished with incomplete vehicles is on the vehicle and is operational and that applicable instructions for incorporating such hardware into the completed vehicle's electrical or mechanical systems are strictly followed.

Further, to avoid any question of certification coverage, approval of any modification or use of an engine or vehicle which may alter or render inoperative any of the emission control components must be obtained from the United States Environmental Protection Agency by the manufacturer making such modification or use prior to distribution, sale, offering for sale, introduction, or delivery for introduction of the subject vehicle into U.S. commerce. Additionally, the manufacturer making such modification or use must obtain approval from the California Air Resources Board if the new vehicle will be delivered for sale or use in the State of California.

HIGH ALTITUDE REQUIREMENTS

United States Environmental Protection Agency regulations do not contain unique emission certification requirements for trucks that will be sold or delivered to customers for principal use above 1,219 m [4,000 ft].

UNLEADED GASOLINE LABEL

Regulations no longer require the manufacturer to affix permanent labels reading "Unleaded Gasoline Only" or "Unleaded Fuel Only" to vehicles destined for sale in the United States or Canada. Such labels may, however, be required for vehicles sold into other markets. It is the responsibility of the body builder, installer, or any subsequent manufacturer to properly label vehicles for the market in which they are sold.

TAMPERING WITH NOISE CONTROLS

Federal law prohibits the removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into such vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use. Federal Law also prohibits the use of such vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:

- Removal of fender apron absorbers, fender apron barriers, underbody noise shields, or acoustical absorptive material.
- Removal of or rendering inoperative the engine speed governor so as to allow engine speed to exceed manufacturer's specifications.
- Removal or modification of air duct, air intake choke or silencer, air cleaner, or air cleaner element.
- Removal of, or rendering inoperative, exhaust system components including the catalyst inlet pipe, muffler, outlet pipe, resonator, or diffuser.
- Removal of the fan shroud. Removal of or rendering inoperative the fan clutch.

New vehicles manufactured for sale in Canada must comply with applicable provisions of Canada Motor Vehicle Safety Standard 1106, Noise Emissions.

WARRANTY AND MAINTENANCE

A copy of the appropriate Ford truck *Owner's Manual* and *Warranty Guide* must be installed in every vehicle prior to sale to the ultimate purchaser in order to provide emission systems warranty information and maintenance schedules. It also provides warranty information, instructions for maintenance, use, and repair of vehicle noise emission control systems, a maintenance record format, and list of prohibited tampering acts.

EVAPORATIVE EMISSIONS

All Federal light and heavy duty trucks and all California vehicles with gasoline engines are required to comply with evaporative emissions requirements established by the Environmental Protection Agency or the California Air Resources Board. Production fuel systems supplied on incomplete trucks manufactured by Ford Motor Company comply with these requirements. **If the subsequent stage manufacturer adds to or modifies the air intake system or fuel system in any manner, it becomes the responsibility of the modifier to assure compliance with the applicable regulations.** Refer to the Design Recommendation section of the *Ford Truck Body Builders Layout Book* for additional fuel system evaporative emissions information.

MALFUNCTION INDICATOR LIGHT (MIL)

The "Malfunction Indicator Light" is used to indicate malfunctions of the engine's emission control system and certain powertrain emissions-related components. For all Ranger incomplete vehicles, the MIL is Ford-installed and operational in the instrument panel.

OZONE DEPLETING SUBSTANCE (ODS)

The Clean Air Act of 1990, Section 611 requires any product (i.e., completed vehicle) containing or manufactured with any Class I Ozone Depleting Substance on, or after, May 15,1993 must be identified with a "clearly and conspicuously attached label."

Ford Motor Company has eliminated Class I ODS from its manufacturing processes. All Ford Truck incomplete vehicles will not have Class I ODS content.

Manufacturers, including subsequent stage manufacturers, are required to label their products if the product, including any component (whether manufactured by that manufacturer or not), contains a Class I ODS or if the manufacturer used a Class I ODS in the manufacturing of the product. If a vehicle is so affected by a Class I ODS, that information must be placed on a product warning label. See EPA regulations on wording, placement, size, and combining labels; in Canada consult the appropriate Provincial or Territorial Ministry of Environment.

CALIFORNIA FUEL VAPOR RECOVERY

California regulations require that the vehicle fuel systems be designed to accommodate a vapor recovery fueling nozzle including unobstructed access to the fill pipe. Fuel filler pipes installed as shown in Figure C will comply with the "Specifications For Fill Pipes and Openings of Motor Vehicle Fuel Tanks" referenced in Title 13 California Administrative Code provided no part of the aftermarket body, as installed, intrudes within a 254 mm [10 in] radius cylinder centered on the fuel filler port, with its axis parallel to the ground, starting at the outer-most surface of the Ford supplied fuel filler housing and projecting outward away from the body.

CALIFORNIA MOTOR VEHICLE EMISSION CONTROL LABEL

To meet California emission certification regulations, the Vehicle Emission Control Information (VECI) label must be welded, riveted, or otherwise permanently attached to an area within the engine compartment or to the engine in such a way that it will be readily visible to the average person after installation of the engine in a vehicle. In selecting an acceptable location, the manufacturer shall consider the possibility of accidental damage (e.g., possibility of tools or sharp instruments coming in contact with the label). The label shall be affixed in such a manner that it cannot be removed without being destroyed or defaced, and shall not be affixed to any part which is likely to be replaced during the vehicle's useful life. For motor vehicles rated at 6350 kg [14,000 lb] GVWR or less, the label shall not be affixed to any equipment which is easily detached from the vehicle. As used in these specifications, readily visible to the average person shall mean that the label shall be readable from a distance of 460 mm [18 in] without any obstructions from vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts, (e.g., vacuum hoses, ignition wires). Alternately, information required by these specifications to be printed on the label shall be no smaller than 8-point type size provided that no vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts that can be moved out of the way without disconnection, obstruct the label.

Completed vehicles for retail sale in California require a machine-readable Vehicle Identification Number (VIN) bar-code label made of paper, plastic, metal, or other permanent material which shall be affixed in a readily visible location to either the door-latch post next to the driver's seating position, the door edge that meets this door-latch post, or above the instrument panel in a location clearly visible through the lower left corner of the windshield. All incomplete vehicles will conform to this standard.

For the VECI and VIN labels, sufficient clearance shall be provided to use a non-contact barcode reading wand. For the VECI label, the label and any adhesives used shall be designed to withstand typical vehicle environment conditions in the area where the label is attached for the vehicle's total expected life. Typical vehicle environmental conditions shall include, but are not limited to, exposure to engine lubricants and coolants (e.g., gasoline, motor oil, brake fluids, water, ethylene glycol), under hood temperatures, steam cleaning, and paints or paint solvents.

RADIO FREQUENCY INTERFERENCE (RFI)

The ignition system on your vehicle has been designed to be capable of compliance with RFI requirements established by the Canadian government. However, because Ford Motor Company has no control over how an incomplete vehicle is completed by subsequent stage manufacturers, Ford Motor Company does not represent that the completed vehicle incorporating the Ford-built components will comply with those requirements. Any ignition system component (i.e.: spark plugs, ignition wiring, coil suppressor assembly, etc.) that is replaced should be replaced by the same Ford Motor Company part number or equivalent to maintain RFI suppression.

While there are currently no RFI regulations in the United States specifically applicable to automotive ignition systems, all Ford Motor Company trucks built with an ignition system use the same or equivalent components to those supplied on Canadian vehicles.

Ford Motor Company recommends that all ignition system service be performed at a Ford authorized service facility to help hold RFI emissions levels to a minimum.

Additional RFI information is contained in the "Canadian Vehicles" section of this manual.

Devices that emit radio frequency (RF) energy such as AM/FM radios, mobile telecommunications systems (two-way radios, telephones), and radio controlled security systems are subject to the rules and regulations of the Federal Communications Communication (FCC), including 47 CFR Parts 2 and 15. Any such system installed in a vehicle should comply with those rules and should be installed only by a qualified technician. In addition, to ensure continued compliance with the FCC's regulations, RF devices must not be modified or changed in a manner not expressly approved by Ford Motor Company Mobile Communication Systems. RF devices particularly, if not properly installed, may adversely affect the operation of the vehicle. For example, such systems when operated may cause the engine to stumble or stall. In addition, such systems themselves may be damaged or their operation affected by the operation of the vehicle. (Citizens Band [CB] transceivers, garage door openers, and other transmitters whose power output is 5 watts or less, ordinarily will NOT affect vehicle operation.)

Because Ford Motor Company has no control over the operation or manufacture of such systems or their installation, Ford Motor Company cannot assume responsibility for any adverse effects or damage if this equipment is used.

Additional guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs/download/Mobile_Radio_Guide.pdf.

FORD BODY BUILDERS LAYOUT BOOK

Throughout this Incomplete Vehicle Manual you will find reference to information found in the *Ford Body Builders Layout Book* which contains additional design recommendations and specifications provided to assist subsequent stage manufacturers in completing incomplete vehicles. The *Ford Body Builders Layout Book* can be accessed via the web at https://fordbbas.com under “Publications”.

FORD SERVICE PUBLICATIONS

Many Ford Service Publications pertain to specific model year and vehicle types. Ford Service Publications are available by subscription via the web at www.motorcraft.com. The following publications are a few of many manuals which are available from Helm Incorporated; call: 1-800-782-4356

- Ford Truck Shop Manuals
- Ford Towing Manual
- Ford Electrical & Vacuum Trouble Shooting Manual
- Ford Wiring Diagram

FORD BODY BUILDER ADVISORY SERVICE

The Ford Body Builder Advisory Service may be consulted regarding information contained in this manual via the following methods:

- Call (877) 840-4338
- E-mail via the web at https://fordbbas.com under “Contact Us”.

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